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ABSTRACT

Instructional materials are provided for a workshop to enable participants to educate patients and food service staff regarding diabetic diets, incorporating current therapeutic recommendations and allowing variation and flexibility. Representative topics are facts about diabetes mellitus, high risk groups, symptoms, treatment and goals of diet therapy, types of diabetic diets, medications used in its treatment, the food exchange system, sugar substitutes, nutrition label and nutrition label exchanges, and converting a recipe to exchanges. An instructor's guide lists workshop activities and a workshop outline with suggestions for instructor activities. Other contents include information sheets for participants, transparency masters, workshop assignments, answers to workshop assignments, and a list of workshop references. (YLB)

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New Approaches To Planning Diabetic Diets Workshop

Written by
Georgia Kimmel, M.P.H., RD, LD

Coordinated by
Judy Milroy, Assistant Coordinator,
Business and Industrial Training Services
State Department of Vocational and Technical Education
Stillwater, Oklahoma

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for the Department of Business and Industrial Training Services
Leo Presley, State Supervisor
Oklahoma State Board of Vocational and Technical Education
John Folks, Chairman
Francis T. Tuttle, Director
Bob Patton, Coordinator, Curriculum and Instructional Materials Center
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WORKSHOP OBJECTIVE

After completing this workshop, the participant should be able to educate patients and food-service staff regarding diabetic diets, incorporating current theraputic recommendations, and allowing variation and flexibility.

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INSTRUCTOR'S GUIDE

A. Ask the area school short-term training administrator to print in the workshop flyer a request for participants to bring to the workshop a copy of the current *Oklahoma Diet Manual* for use in completing the workshop assignments.

B. Review workshop materials and plan presentation.

C. Order or obtain materials planned to supplement workshop.

1. Films and filmstrips with audiocassette tapes

(NOTE: The filmstrips listed below are available on a free-loan basis to Oklahoma instructors. Oklahoma teachers may order from the State Coordinator of the Dietary Manager Program, Tulsa County AVTS, 3420 South Memorial Drive, Tulsa, Oklahoma 74145. Out-of-state teachers must order from the addresses listed with the filmstrips.)

a. *Diabetic Meal Planning*

(NOTE: This filmstrip—available from National Health Films, Box 13973, Station K, Atlanta, Georgia 30324—explains the ease and flexibility of using exchange lists in diabetic meal planning. Illustrated in the film are a sample diet prescription and meals that are varied and attractive, as well as nutritious.)

b. *Diabetic Diet Counseling*

(NOTE: This filmstrip—available from National Health Films, Box 13973, Station K, Atlanta, Georgia 30324—makes practical suggestions regarding the selection of food items and the preparation of daily meals. Eating in a restaurant is discussed, as are food replacement during short-term illness, and the importance of the availability of a quickly metabolized form of carbohydrate.)

c. *Diabetes: The Hidden Disease* and *Diabetes: The Journey and the Dream*

(NOTE: These films are available from the Diabetes Affiliate, ADA, 6465 South Yale Avenue, Suite 435, Tulsa, Oklahoma 74136. *Hidden Disease* covers Type II diabetes mellitus, and *Journey* looks at children and pregnant women with diabetes mellitus.)

2. Pamphlets

(NOTE: The instructor will have to obtain copies of pamphlet "b" or "c" for participants to use in completing Workshop Assignment #2.)

a. "Using Nutrition Labels with Food Exchange Lists"

(NOTE: Available from the U.S. Public Health Service, Food and Drug Administration, 5600 Fishers Lane, Rockville, Maryland 20852, this pamphlet explains how people on weight-control diets can use the information on food labels to add variety to their diets.)

b. "Eating Out Made Simple"

(NOTE: Available from St. Francis Hospital, 6161 South Yale Avenue, Tulsa, Oklahoma, this pamphlet lists fast-food restaurants and the exchange values for fast-food items.)

c. "Fast-Food Facts"

(NOTE: Available from the International Diabetes Center, 4959 Excelsior Boulevard, Minneapolis, Minnesota 55416, this pamphlet [revised in 1983] includes nutritive information on calories, grams of carbohydrate, protein, and fat; milligrams of sodium; and suggested exchange values for twenty-one fast-food restaurants.)

d. "Adding Fiber to Your Diet"

(NOTE: Available from the International Diabetes Center, 4959 Excelsior Boulevard, Minneapolis, Minnesota 55416, this booklet includes information on why fiber is important, how to add fiber to the diet, food groups with their approximate fiber contents, tips for adding fiber using whole grains and legumes, and sample menus.)

e. "Exchange Lists for Meal Planning"

(NOTE: This pamphlet is available from the American Diabetes Association, 2 Park Avenue, New York, New York 10016. Check with your local diabetes association for other pamphlets.)

f. "Sodium Smart: The Campbell Plan for Low-Sodium Eating"

(NOTE: This pamphlet is available from the Consumer Nutrition Center, Campbell Soup Company, Campbell Place, Camden, New Jersey 08011.)

3. Books and booklets

a. *Family Cookbook,* Vol. I and Vol. II

(NOTE: Published by Prentice-Hall, Incorporated and available from the American Diabetes Association, the American Dietetic Association, and through most bookstores, these cookbooks include numerous recipes with nutrient composition and exchange values for family use. They also offer suggestions for exercise, eating out, sick days, fast foods, brown-bag lunches, canning and freezing foods, and overweight persons with diabetes. They are excellent references.)

b. *What You Need to Know About Diabetes*

(NOTE: Available from the American Diabetes Association or your local affiliate, this series of booklets contain basic information on diabetes in an easy-to-read, question-and-answer format. The series includes detailed explanations of the disease, its early symptoms, its control, and its treatment.)

c. *Everything About Exchange Values for Foods*

(NOTE: Written in 1981, by Cinnamon P. Swanson, this book is available from the Idaho Research Foundation, Incorporated, P.O. Box 3368, University Station, Moscow, Idaho 83843. The book includes exchange values for convenience foods, prepared items, and alcoholic beverages. It also gives directions for calculating exchanges of mixed dishes. It is designed primarily for persons with diabetes and for professionals who already have a good grasp of the exchange lists.)

d. *Exchanges for All Occasions*

(NOTE: Available from the International Diabetes Center, this 200-page book helps meet the challenges presented to the diabetic person by entertaining, travel, exercise, vegetarian diets, holidays, dining out, ethnic foods, illness, and many other special situations.)

4. Slide/tape program, *Diabetes — The Facts and Figures*

(NOTE: This slide/tape program comes with a script and is available from the Oklahoma Affiliate, ADA, 6465 South Yale Avenue, Suite 435, Tulsa, Oklahoma 74136.)

5. Additional resources available from the following organizations

a. American Dietetic Association
430 North Michigan Avenue
Chicago, Illinois 60611

b. American Diabetes Association, Inc.
2 Park Avenue
New York, New York 10016

c. National Diabetes Information Clearinghouse
Box NDIC
Bethesda, Maryland 20205

d. Ames Company
Division of Miles Laboratories, Inc.
Elkhart, Indiana 46514

e. Eli Lilly and Company
740 South Alabama Street
Indianapolis, Indiana 46225

f. E.R. Squibb and Sons
P.O. Box 4000
Princeton, New Jersey 08540

g. Juvenile Diabetes Foundation
Executive Office, 23 East 26th Street
New York, New York 10010

h. Pfizer Laboratories
235 East 42nd Street
New York, New York 10017

i. Upjohn Company
7000 Portage Road
Kalamazoo, Michigan 49001

D. Place pamphlets and booklets obtained from various organizations in workshop folder.

E. Make transparencies and obtain an overhead projector and appropriate projectors for selected films and filmstrips.

F. Present workshop.

1. Introduce yourself and the topic of the workshop.

SUGGESTIONS:

- Break the ice by having participants introduce themselves to those sitting near them.
- Suggest that participants take notes during the workshop.
- Show slide/tape program, *Diabetes—The Facts and Figures*.
- Discuss "Facts About Diabetes Mellitus," workshop page 9.

2. Introduce participants to glossary of terms associated with diabetes mellitus, workshop page 11.

   SUGGESTIONS:

   - Discuss each term, using Transparencies #1 through #5 to illustrate appropriate terms.
   - Show film or filmstrip that explains what diabetes mellitus is.
   - Refer participants to the book, *What You Need to Know About Diabetes*.
   - Use Quick Check exercise as a pretest or follow-up quiz.

3. Review the population groups at high risk of developing diabetes mellitus, workshop page 25.

   SUGGESTIONS:

   - Identify workshop participants who are at high risk of developing diabetes.
   - Have participants discuss the typical hospital patient with diabetes or the resident with diabetes in a long-term care facility as compared with those populations at high risk.
   - Use Quick Check exercise as a pretest or follow-up quiz.

4. Review clinical classifications, former terminology, and characteristics of diabetes mellitus and glucose intolerance, workshop page 27.

   SUGGESTIONS:

   - Show film *Diabetes: the Hidden Disease* or *Diabetes the Journey and the Dream*.
   - Use Quick Check exercise as pretest or follow-up quiz.

5. Review symptoms and signs of Type I and Type II diabetes mellitus, workshop page 31.

   SUGGESTION:

   - Use Quick Check exercise as a pretest or follow-up quiz.

6. Review long-term complications of diabetes mellitus, workshop page 33.

   SUGGESTION:

   - Use Quick Check exercise as a pretest or follow-up quiz.

7. Review treatment phases and emphasize goals of diet therapy in the treatment of diabetes mellitus, workshop page 35.

   SUGGESTIONS:

   - Use Transparency #6 to emphasize the goals of diet therapy.

- Refer participants to chart "Strategies for Normalizing Blood Sugar in Diabetic Patients," workshop page 39.

- Use Quick Check exercise as a pretest or follow-up quiz.

8. Review the three types of diabetic diets, workshop page 41.

   SUGGESTIONS:

   - Discuss the use of the liberal diabetic diet in the long-term care facility.

   - Use Quick Check exercise as a pretest or follow-up quiz.

9. Review the guidelines for educating individuals who have diabetes mellitus, workshop page 43.

   SUGGESTIONS:

   - Refer participants to "General Dietary Recommendations for Diabetic Patients," workshop page 45.

   - Have participants complete Quick Check exercise related to guidelines.

   - Show filmstrip *Diabetic Diet Counseling*.

   - Invite a person with Type I diabetes to speak to the workshop participants about the changes in life-style that are required when a person is diagnosed as having insulin-dependent diabetes mellitus.

   - Invite an allied health professional involved in diabetes education to discuss acceptance of the disease and readiness for learning.

   - Have some participants role play the diet education of a patient who does not want to make diet changes.

10. Review short-term complications—such as diabetic coma and insulin reaction—that may occur in persons with diabetes mellitus, workshop page 47.

    SUGGESTIONS:

    - Have participants indicate actions and characteristics of someone who is inebriated (drunk). Compare to the list of symptoms of hypoglycemia.

    - Make a poster of foods suitable for treating insulin reaction.

    - Use Quick Check exercise as a pretest or a follow-up quiz.

11. Review the differences in insulin and oral medications, workshop page 49.

    SUGGESTIONS:

    - Refer participants to chart outlining time and course of action of insulin formulations, workshop page 51.
    - Use Quick Check exercise as a pretest or a follow-up quiz.

12. Review and discuss the food exchange system, workshop page 53.

    SUGGESTIONS:

    - Show filmstrip *Diabetic Meal Planning*.
    - Play games using the exchange system.
    - Bring food models and pictures of foods for participants to identify according to exchange grouping.
    - Define soluble and insoluble fiber.
    - Discuss the effects of insoluble and soluble forms of fiber on blood sugar.
    - When discussing fiber content in exchange lists, refer participants to "Exchange List Guidelines for High-Fiber Choices," workshop page 55.
    - Refer participants to pamphlet "Adding Fiber to Your Diet."
    - Use Quick Check exercise as a pretest or follow-up quiz.
    - Have participants complete Workshop Assignment #1, workshop page 57. Critique assignment (answers are on page 97), and discuss with group.

13. Review and discuss the various forms of sugar and sugar substitutes, workshop page 59.

    SUGGESTIONS:

    - Refer participants to chart on diabetic uses of sugar substitutes, workshop page 61.
    - Use Quick Check exercise as a pretest or a follow-up quiz.
    - Bring to the workshop a variety of food labels so that participants may evaluate the forms of sugar in various products.
    - Judge foods as appropriate or inappropriate for the person with diabetes.
    - Bring to the workshop samples of sugar substitutes so that participants may taste and evaluate ingredients.
    - Bring to the workshop labels from food items containing sugar substitutes.
    - Conduct a group discussion on the use of sugar substitutes and products containing them in the participants' facilities.

14. Introduce participants to techniques for building flexibility into the diabetic diet, workshop page 63.

    SUGGESTIONS:

    - Use Quick Check exercise as a pretest or follow-up quiz.
    - Use Transparency #7 to illustrate your discussion of alcoholic beverages.
    - Display diabetic and low-calorie cookbooks such as *Family Cookbook*, Volumes I and II.
    - Refer participants to "Nutrition Label" and "Nutrition Label Exchanges," workshop page 67, and to pamphlet, "Using Nutrition Labels with Food Exchange Lists."
    - Divide participants into small groups and have them complete Workshop Assignments #2 through #4. Refer participants to pamphlets "Eating Out Made Simple" and "Fast-Food Facts" as an aid in completing Workshop Assignment #2. Critique assignments (answers are on page 97), and discuss with group.
    - Discuss with participants "Whole-Wheat Pizza Recipe," and "Whole-Wheat Pizza Recipe Exchanges," workshop pages 73 and 75.

15. Introduce participants to alterations that are possible in the diabetic diet, workshop page 79.

    (NOTE: Combined diets are covered in more detail in another workshop entitled *Principles of Combining Two or More Theraputic Diets*.)

    SUGGESTIONS:

    - Use Quick Check exercise as a pretest or follow-up quiz.
    - Illustrate your discussion of exercise and diet with Transparency #8.
    - Have participants refer to the *Oklahoma Diet Manual* to complete Workshop Assignment #5. Critique assignment (answers are on page 98), and discuss with group.
    - Note the requirements of the insulin-dependent diabetic patient versus those of the non-insulin-dependent diabetic patient.
    - Discuss recipe alterations that can be made, such as reducing fat in a recipe by one-third to one-half; reducing sugar by one-fourth to one-third.
    - Discuss with participants "Replacing Food Not Eaten," workshop page 85.
    - Have participants complete Workshop Assignment #6. Critique assignment (answers are on page 98), and discuss with group.

16. Discuss with workshop participants major areas of current research on diet in relation to diabetes care.

    SUGGESTIONS:

    - Briefly explain the glycemic index, workshop page 91.

- Ask participants if they are familiar with new findings regarding care of diabetic patients.
- Review new techniques in care, such as home glucose monitoring and the expanding self-care role of the person with diabetes mellitus.
- Have participants complete Workshop Assignments #7 and #8. Critique assignments (answers are on page 99), and discuss with group.

G. To close the workshop, review major areas of information covered. Urge participants to write to organizations listed in Instructor's Guide to obtain materials for bulletin board displays and for patient and food-service staff education in their facilities.

FACTS ABOUT DIABETES MELLITUS

- Diabetes kills more Americans every year than any other group of diseases, except cancer and heart disease.

- Twelve million people in the United States have diabetes. Undiagnosed diabetics account for 5 million of these persons.

- One person is diagnosed as having diabetes every 60 seconds.

- Complications of diabetes result in 14 percent of all diabetics being bedridden for an average of 1½ months each year.

- The annual estimate of the cost of diabetes in America is devastatingly high. In 1983, diabetes cost the nation 9.7 billion dollars.

GLOSSARY OF TERMS

Blood sugar — Glucose circulating in blood

(NOTE: One hundred percent of carbohydrate is changed to glucose in the blood; approximately 58 percent of protein and 10 percent of fat are also changed to blood glucose.)

Diabetes mellitus — Metabolic disease that affects body's use of carbohydrates, fat, and protein because of disturbance in production or utilization of insulin

(NOTE: Diabetes mellitus can be due to a disease or a lack of insulin produced by the pancreas, as well as by ineffective insulin or insulin-resistance factors present in cells.)

Diabetic coma — Unconsciousness caused by extremely high blood sugar and ketoacidosis; can result in death

Fasting — Abstaining from all or certain foods for a period of time to allow for laboratory tests of blood sugar levels

Food exchanges — Measured or weighed servings of food that are approximately equal in calories, carbohydrates, fat, and protein

Glycemic index — Rating of how much a carbohydrate-containing food raises blood sugar

Glucose — Simple sugar that exists in foods; the form of carbohydrate used by the body

Glucose tolerance — Body's ability to use glucose; can be measured by a laboratory test

Glycosuria — Presence of sugar (glucose) in the urine

Hyperglycemia — Elevated level of glucose in the blood

Hypoglycemia — Lower-than-normal level of glucose in the blood

Gangrene — Death of body tissue, usually caused by lack of blood to the tissue

Insulin — Hormone produced by pancreas; helps body cells use blood sugar for energy or store it for later use

(NOTE: Insulin is a protein and cannot be taken by mouth because digestion would change its chemical makeup.)

Insulin-dependent diabetes mellitus (Type I) — Condition in which pancreas is unable to produce an adequate amount of insulin for the body; requires daily insulin injections

Insulin reaction — Condition resulting from low blood sugar in an individual with insulin-dependent diabetes

Ketoacidosis — Serious condition in which individuals who do not have enough insulin burn body fat for energy because they cannot use their glucose; therefore, their bodies overproduce ketones

Ketone — Substance formed when body burns fat for energy

Kidney — Either of a pair of glandular organs in the upper abdominal cavity, which separate water and waste products of the blood and excrete them as urine through the bladder

Meal plan — System for prescribing correct amounts and kinds of foods to be eaten at specified times; provides variety in meals

Neuropathy — Disease of nerve tissue

Noninsulin-dependent diabetes mellitus (Type II) — Condition in which pancreas still produces insulin but in insufficient amounts for body needs; high blood sugar can usually be controlled by diet or diet and oral hypoglycemic agents

Obesity — Condition in which an individual's weight is greater than 20 percent above ideal weight

Oral hypoglycemic agent — Drug used to reduce blood-glucose levels by stimulating the pancreas to produce more insulin or by enhancing action of insulin; Orinase, Tolinase, Dymelor, Diabenese, Glucotrol, Micronase, and DiBeta are examples of oral hypoglycemic agents presently on the market

Overweight — Condition in which individual's weight is 10 to 20 percent above ideal weight with too high a proportion of fat to lean body tissue

(NOTE: Athletes can weigh 10 to 20 percent above ideal weight but not be overweight because their body tissues contain very little fat.)

Pancreas — Gland that lies just behind the stomach; secretes insulin and many important digestive enzymes

QUICK CHECK

How well can you remember terms and definitions associated with diabetic diets? Test yourself by completing the following exercise. Try not to peek at the answers at the bottom of page 14.

Match the following terms to their correct definitions by writing the correct numbers in the blanks. Each correct answer counts 4 points. Perfect score is 100 points.

_____a. Measured and weighed servings of food that are approximately equal in calories, carbohydrates, fat, and protein

_____b. Metabolic disease that affects the body's use of carbohydrates, fat, and protein because of disturbance in production or utilization of insulin

_____c. Unconsciousness caused by extremely high blood sugar and ketoacidosis

_____d. Glucose circulating in the blood

_____e. Body's ability to use glucose

_____f. Elevated level of glucose in the blood

_____g. Serious condition in which individuals who do not have enough insulin burn body fat for energy because they cannot use their glucose; therefore their bodies overproduce ketones

_____h. Hormone produced by pancreas; helps body cells use blood sugar for energy or store it for later use

_____i. Condition in which pancreas is unable to produce adequate amount of insulin for the body; requires daily injections of insulin

_____j. Condition resulting from low blood sugar in an individual with insulin-dependent diabetes

_____k. Lower than normal level of glucose in the blood

_____l. Substances formed when body burns fat for energy

_____m. System for prescribing correct amounts and kinds of foods to be eaten at specified times; provides variety in meals

_____n. Gland that lies just behind stomach; secretes insulin and many important digestive enzymes

1. Insulin-dependent diabetes mellitus (Type I)
2. Diabetic coma
3. Ketoacidosis
4. Blood sugar
5. Glucose tolerance
6. Insulin
7. Insulin reaction
8. Food exchanges
9. Diabetes mellitus
10. Hypoglycemia
11. Hyperglycemia
12. Ketone
13. Pancreas
14. Meal plan

_____o. Condition in which individual's weight is greater than 20 percent above ideal weight

_____p. Drug used to reduce blood-glucose levels by stimulating the pancreas to produce more insulin or by enhancing action of insulin

_____q. Condition in which individual's weight is 10 to 20 percent above ideal weight with too high a proportion of fat to lean body tissue

_____r. Abstaining from all or certain foods for a certain period of time to allow for laboratory tests of blood-sugar levels

_____s. Condition in which pancreas still produces insulin but in insufficient amounts for body needs; high blood sugar can usually be controlled by diet or diet and oral hypoglycemic agents

_____t. Simple sugar that exists in foods; the form of carbohydrate used by the body

_____u. Either of a pair of glandular organs in upper abdominal cavity, which separate water and waste products from the blood and excrete them as urine through the bladder

_____v. Disease of nerve tissue

_____w. Death of body tissue, usually caused by lack of blood to the tissue

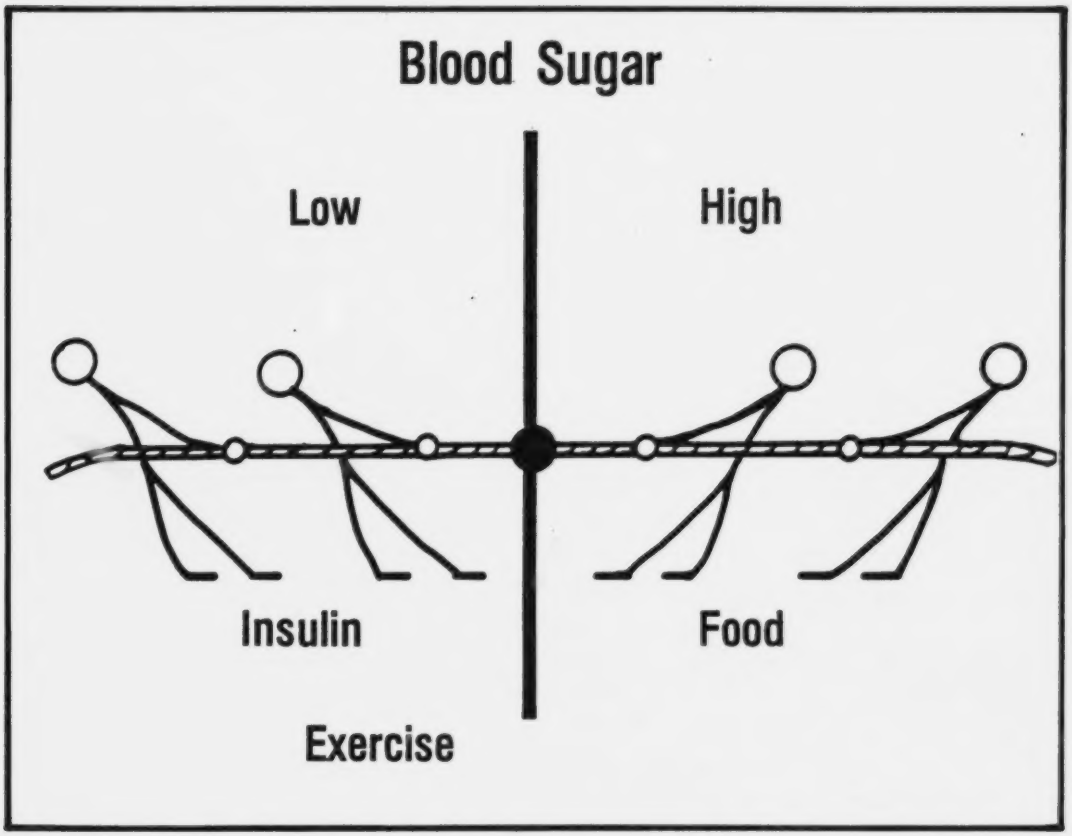
_____x. Rating of how much a carbohydrate-containing food raises blood sugar

_____y. Presence of sugar (glucose) in the urine

15. Kidney
16. Fasting
17. Obesity
18. Overweight
19. Glycemic index
20. Oral hypoglycemic agent
21. Noninsulin-dependent diabetes mellitus (Type II)
22. Gangrene
23. Glycosuria
24. Neuropathy
25. Glucose

a. 8, b. 9, c. 2, d. 4, e. 5, f. 11, g. 3, h. 6, i. 1, j. 7, k. 10, l. 12, m. 14, n. 13, o. 17, p. 20, q. 18, r. 16, s. 21, t. 25, u. 15, v. 24, w. 22, x. 19, y. 23

Normal Blood Sugar



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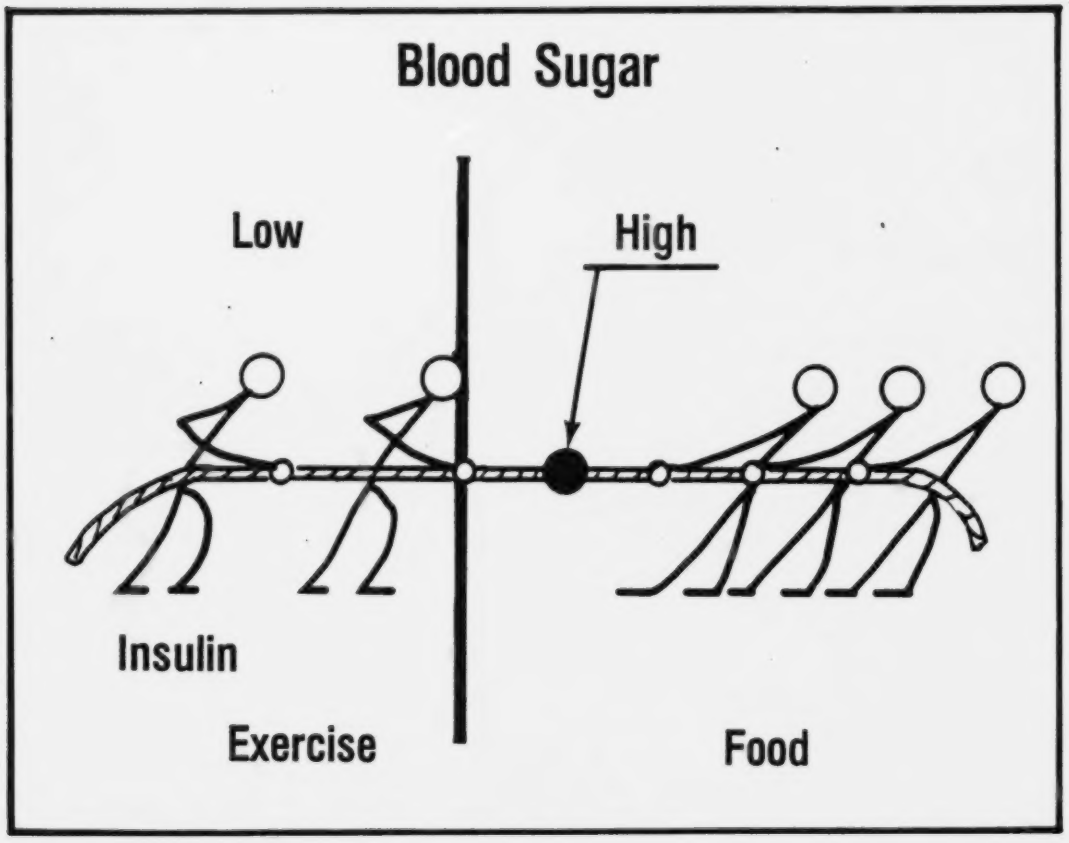
Hyperglycemia



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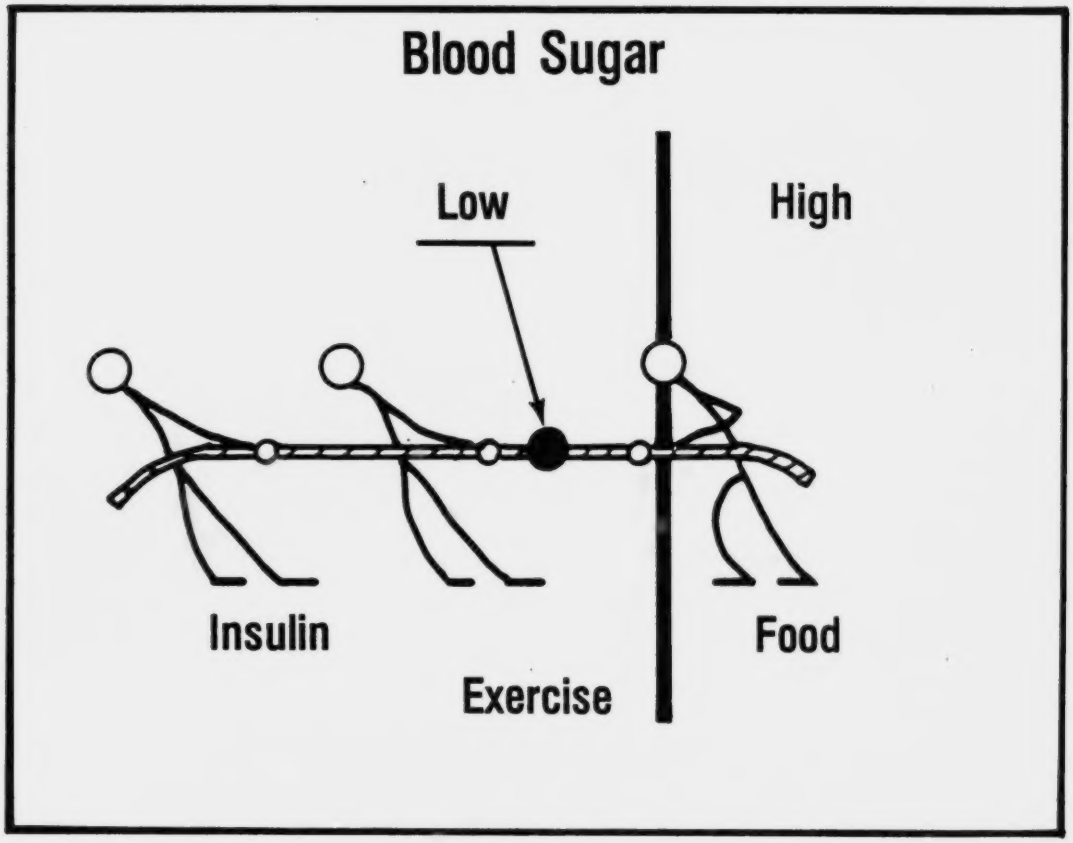
Hypoglycemia



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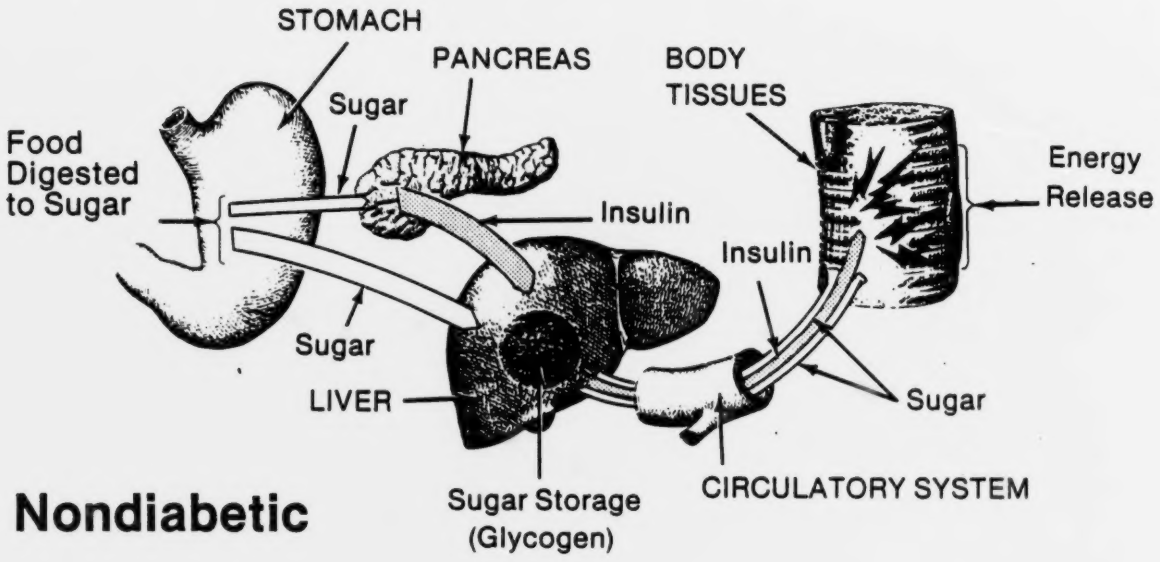
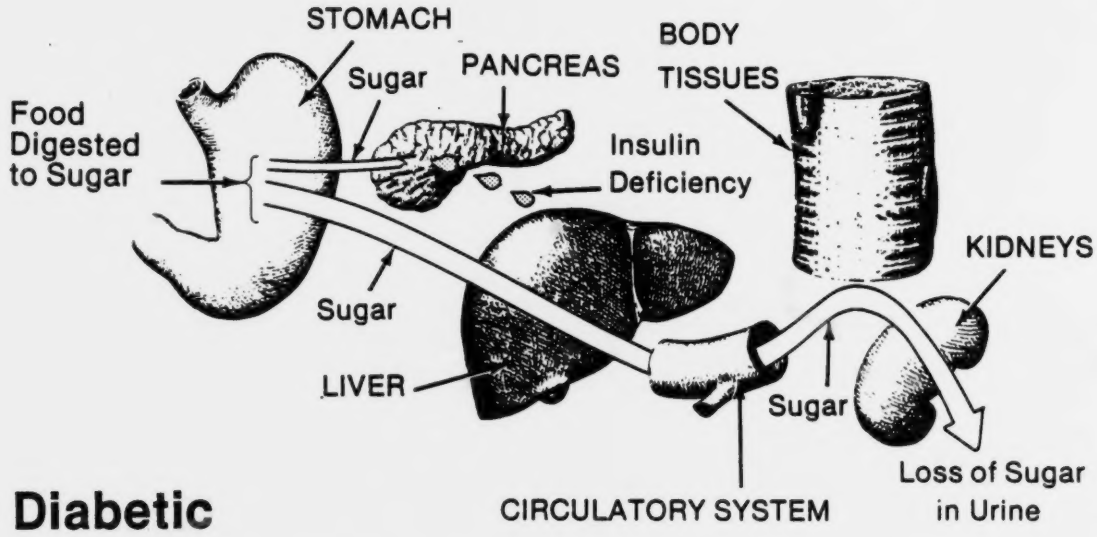
Utilization of Food



Nondiabetic



Diabetic

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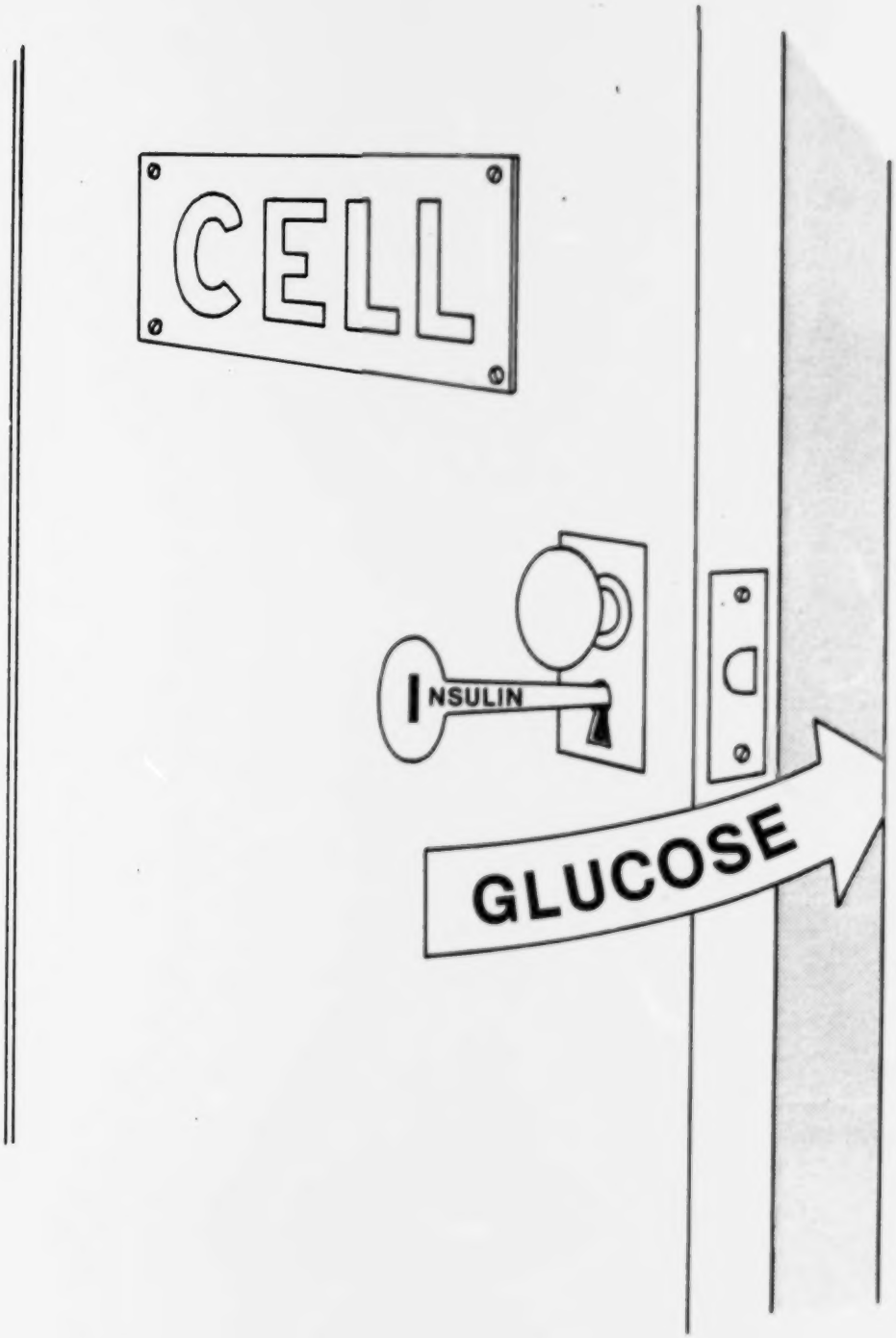
Function of Insulin



HIGH-RISK GROUPS FOR DEVELOPING DIABETES MELLITUS

The cause of diabetes mellitus is not known. Diabetes mellitus affects 12 million Americans, approximately 5 percent of our population.

- **Women** are 50 percent more likely than men to develop diabetes
- **Nonwhites** are 20 percent more likely than whites to develop diabetes
- **Overweight persons** are more likely than normal-weight persons to develop diabetes

  (NOTE: More than 80 percent of individuals with diabetes are overweight when diagnosed. The chances of developing diabetes double with each 20 percent of excess weight.)

- **Older individuals** are more likely to develop diabetes than younger individuals

  (NOTE: The chances of developing diabetes double with each decade of life.)

- **Persons with a family history of diabetes** are more likely to develop diabetes than persons with no family history of the disease; the tendency to develop diabetes is inherited

QUICK CHECK

What groups are at high risk for developing diabetes mellitus? Test your memory by completing the following exercise.

Select from the following list groups at high risk for developing diabetes. Write an "X" in the blank before each correct answer. When you have completed the exercise, check your accuracy against the correct answers at the bottom of the page.

_____a. Persons with high sugar intake

_____b. Persons over forty

_____c. Underweight persons

_____d. Overweight persons

_____e. Persons with a family history of diabetes

_____f. Whites

_____g. Nonwhites

_____h. Females

_____i. Males

_____j. Persons with a high protein intake

b, d, e, g, h

CLINICAL CLASSIFICATION OF DIABETES AND GLUCOSE INTOLERANCE

Clinical Classifications and Characteristics

Clinical Classification	Former Terminology	Characteristics
Insulin-dependent diabetes mellitus (IDDM), Type I	Juvenile diabetes Juvenile-onset diabetes Juvenile-onset-type diabetes (JOD) Ketosis-prone diabetes Brittle diabetes	Occurs at any age Requires insulin to prevent ketosis and to preserve life
Noninsulin-dependent diabetes mellitus (NIDDM), Type II 1. Nonobese NIDDM 2. Obese NIDDM	Adult-onset diabetes Maturity-onset diabetes Maturity-onset-type diabetes (MOD) Ketosis-resistant diabetes Stable diabetes	Usually occurs in persons over 40 years old Does not require insulin injections on a regular basis Can be controlled by diet, exercise, and oral medications Nearly 80 percent of all persons with Type II diabetes are overweight
Gestational diabetes mellitus (GDM)	Gestational diabetes	Occurs during pregnancy, but following delivery women usually revert to normal blood sugars Thirty to 40 percent of GDM women will develop diabetes within 5 to 10 years
Diabetes mellitus associated with certain of the following conditions or syndromes 1. Pancreatic disease 2. Hormonal condition 3. Drug or chemical-induced syndromes 4. Insulin receptor abnormalities 5. Certain genetic syndromes 6. Other conditions and syndromes	Secondary diabetes	Presence of diabetes and an associated condition or syndrome
Impaired glucose tolerance (IGT) 1. Nonobese IGT 2. Obese IGT 3. IGT associated with conditions and syndromes listed above	Asymptomatic diabetes Chemical diabetes Subclinical diabetes Borderline diabetes Latent diabetes	Occurs in persons with glucose levels between normal and diabetic Normal fasting blood sugar but elevated blood sugar response to meals during glucose-tolerance test Treated with controlled diet and exercise

Adapted from *Diabetes*, Vol. 28, No. 12, December 1979, copyright 1979 by *The Journal of the American Diabetes Association*. Used with permission.

QUICK CHECK

Finding it hard to sort out the clinical classifications, former terms, and characteristics? Test yourself by completing one of the following exercises. Check your answers against those at the bottom of the page 30.

Exercise #1

Match the following characteristics to their correct clinical classifications by writing the correct numbers in the blanks. Each correct answer counts 20 points. Perfect score is 100 points.

_____a. Presence of diabetes and an associated condition or syndrome

_____b. Occurs at any age; requires insulin to prevent ketosis and to preserve life

_____c. Occurs during pregnancy, but following delivery women usually revert to normal blood sugars; 30 to 40 percent of these women will develop diabetes within 5 to 10 years

_____d. Usually occurs in persons over 40 years old; does not require insulin injections on a regular basis; can be controlled by diet, exercise, and oral medications; nearly 80 percent of all persons with this type of diabetes are overweight

_____e. Occurs in persons with glucose levels between normal and diabetic; normal fasting blood sugar but elevated blood sugar response to meals during glucose-tolerance test; treated with controlled diet and exercise

1. Insulin-dependent diabetes mellitus (IDDM), Type I
2. Noninsulin-dependent diabetes mellitus (NIDDM), Type II
3. Impaired glucose tolerance (IGT)
4. Gestational diabetes mellitus (GDM)
5. Diabetes mellitus associated with certain conditions and syndromes

Exercise #2

Distinguish between clinical classifications and former terminology. Write "CC" before clinical classifications and abbreviations and "FT" before former terminology and abbreviations. Each correct answer counts 4 points. Perfect score is 100 points.

_____a. Asymptomatic diabetes

_____b. Secondary diabetes

_____c. Maturity-onset diabetes

_____d. Type I

_____e. Juvenile diabetes

_____f. Brittle diabetes

_____g. Gestational diabetes

_____h. GDM

_____i. JOD

_____j. IGT

_____k. Stable diabetes

_____l. Chemical diabetes

_____m. Obese NIDDM

_____n. Nonobese IGT

_____o. Subclinical diabetes

_____p. Adult-onset diabetes

_____q. Insulin-dependent diabetes mellitus

_____r. Ketosis-prone diabetes

_____s. Ketosis-resistant diabetes

_____t. IDDM

_____u. Noninsulin-dependent diabetes mellitus

_____v. Gestational diabetes mellitus

_____w. Latent diabetes

_____x. Borderline diabetes

_____y. Type II

Exercise #1 — a. 5, b. 1, c. 4, d. 2, e. 3

Exercise #2 — a. FT, b. FT, c. FT, d. CC, e. FT, f. FT, g. CC, h. CC, i. FT, j. CC, k. FT, l. FT, m. CC, n. CC, o. FT, p. FT, q. CC, r. FT, s. FT, t. CC, u. CC, v. CC, w. FT, x. FT, y. CC

SYMPTOMS AND SIGNS OF INSULIN-DEPENDENT AND NONINSULIN-DEPENDENT DIABETES MELLITUS

Symptoms and Signs of the Two Types of Diabetes Mellitus

Insulin-Dependent (Type I)	Noninsulin-Dependent (Type II)
(NOTE: Insulin-dependent diabetes mellitus occurs most frequently in children and young adults. It is characterized by the sudden appearance of any of the following symptoms.)	(NOTE: Noninsulin-dependent diabetes mellitus usually occurs after the age of 40. It may include any of the signs or symptoms of insulin-dependent diabetes, or be signaled by any one of the following signs or symptoms.)
Causes frequent urination	Drowsiness
(NOTE: Frequent urination is caused by increased fluid consumption as the kidneys work to remove excess glucose from the blood.)	Itching
Abnormal thirst	A slow healing of cuts and bruises
(NOTE: Abnormal thirst results when high blood sugar causes water to be pulled from the cells.)	Blurred vision
Unusual hunger	Excessive weight
(NOTE: Hunger is caused when the body is unable to use foods for energy—body cells are starving.)	Tingling numbness of feet
The rapid loss of weight	Easy fatigue
Irritability	Skin infections
Obvious weakness and fatigue	
Nausea and vomiting	

QUICK CHECK

How well do you remember the signs and symptoms of Type I and Type II diabetes mellitus? Test yourself by completing the signs and symptoms suggested by the letters in the words "caution" and "diabetes" below. Don't peek at the answers at the bottom of the page until you have completed the exercise.

Insulin-dependent diabetes mellitus (Type I)

1. **C** _____
2. **A** _____
3. **U** _____
4. **T** _____
5. **I** _____
6. **O** _____
7. **N** _____

Noninsulin-dependent diabetes mellitus (Type II)

8. **D** _____
9. **I** _____
10. **A** _____
11. **B** _____
12. **E** _____
13. **T** _____
14. **E** _____
15. **S** _____

1. Causes frequent urination, 2. Abnormal thirst, 3. Unusual hunger, 4. The rapid loss of weight, 5. Irritability, 6. Obvious weakness and fatigue, 7. Nausea and vomiting, 8. Drowsiness, 9. Itching, 10. A slow healing of cuts and bruises, 11. Blurred vision, 12. Excessive weight, 13. Tingling numbness of feet, 14. Easy fatigue, 15. Skin infections

LONG-TERM COMPLICATIONS OF DIABETES MELLITUS

Early diagnosis and treatment are thought to prevent complications.

- **Blindness**

  (NOTE: Diabetes mellitus is the leading cause of new cases of blindness in adults under 70 years old. Diabetics are twenty-five times more prone to blindness than nondiabetics.)

- **Kidney disease**

  (NOTE: Persons with diabetes mellitus are seventeen times more prone to kidney disease than nondiabetics.)

- **Gangrene**

  (NOTE: Persons with diabetes are five times more likely to develop gangrene than nondiabetics.)

- **Heart disease**

  (NOTE: Persons with diabetes are twice as prone to developing heart disease than nondiabetic persons.)

- **Premature arteriosclerosis**

- **Death**

  (NOTE: Diabetes is the third leading cause of death by disease in the United States.)

- **Stroke**

- **Ketoacidosis**

- **Neuropathy**

QUICK CHECK

What types of long-term complications may accompany diabetes mellitus? Review the following list and then write an "X" in the blank before each long-term complication of diabetes mellitus. Check your answers with those at the bottom of the page.

_____a. Malnutrition

_____b. Ketoacidosis

_____c. Heart disease

_____d. Stroke

_____e. Anemia

_____f. Neuropathy

_____g. Cirrhosis of the liver

_____h. Kidney disease

_____i. Blindness

_____j. Cancer

_____k. Premature arteriosclerosis

_____l. Deafness

_____m. Gangrene

_____n. Death

_____o. Arthritis

b, c, d, f, h, i, k, m, n

PHASES OF TREATMENT FOR DIABETES MELLITUS

(NOTE: Diabetes mellitus is a chronic illness; there is no cure, but diabetes may be controlled by a combination of three phases of treatment so that the patient can live a normal life.)

- **Meal plan**

  (NOTE: Some patients' diabetes mellitus can be controlled by diet alone.)

- **Medication**

  (NOTE: Insulin or oral hypoglycemics are used to control diabetes mellitus.)

- **Exercise**

  (NOTE: It is very important for the diabetic patient to balance energy intake and energy output.)

GOALS OF DIET THERAPY FOR TREATMENT OF DIABETES MELLITUS

- Attaining and maintaining desirable body weight
- Providing normal growth rate in children and pregnant women
- Minimizing glucose in urine and keeping blood sugar as near normal as possible
- Preventing or delaying development of complications associated with diabetes mellitus
- Modifying diet as necessary for complications of diabetes and for associated diseases

  EXAMPLE: A diabetic individual who has an increased risk of heart disease may benefit from a fat-controlled diet.

- Improving overall health of patient by attaining and maintaining an optimal nutritional status
- Providing each patient with individual education and follow-up program

QUICK CHECK

How much do you remember about the phases of treatment and the goals of diet therapy for treating diabetes mellitus? Test yourself by completing the exercises below. Each correct answer counts 10 points. Perfect score is 100 points. Tally your score by checking your responses against the correct answers on page 35.

Name the phases of treatment for diabetes mellitus.

1. _____

2. _____

3. _____

List the seven diet therapy goals for treating diabetes mellitus.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

6. _____

_____

7. _____

_____

D + I + E = T

Diet	+	Insulin or Oral Hypo-glycemic Agent	+	Exercise	=	Treatment

TM #6

STRATEGIES FOR NORMALIZING BLOOD SUGAR IN DIABETIC PATIENTS

Strategies for Normalizing Blood Sugar in Diabetic Patients

Type I, Insulin-Dependent Diabetes	**Type II, Noninsulin-Dependent Diabetes**
(Exogenous insulin required for survival)	(Sufficient endogenous insulin for survival; treatment focuses on maximizing efficiency of endogenous insulin)
Approximate frequency in the U.S.: 10 percent cases	Approximate frequency in the U.S.: 90 percent cases
Synchronize food intake and insulin action Frequent meals and snacks recommended for conventional therapy Consistency of eating time and meal composition emphasized for conventional therapy Fiber-containing foods may minimize blood sugar rise Regular exercise encouraged	**Obese, approximately 80 percent cases** Weight reduction is primary therapy Hypocaloric diet low in saturated fat Regular exercise **Nonobese, approximately 10 percent cases** Small meals Fiber-containing foods may reduce blood sugar rise Regular exercise encouraged If insulin treated, the strategies for Type I apply

From "Examination of Current Dietary Recommendations for Individuals with Diabetes Mellitus" by R. Arky et. al., *Diabetes Care*. Vol. 5, No. 1, Jan./Feb., 1982. Used with permission.

TYPES OF DIABETIC DIETS

Liberal or free diabetic diet

- Includes mild restrictions on amounts and types of foods
- Is suitable for diabetic patients (usually past middle age) who have been free from symptoms
- Is particularly effective for the geriatric nursing-home resident of normal weight because the times of meals and meal patterns are approximately the same every day

Calorie-controlled diet

- May be suitable for noninsulin-dependent diabetes
- Controls calories only, and varies with patient's ideal weight, height, sex, age, and physical activity
- Number of calories allowed and type of hypoglycemic agent used should be specified by physician

Calculated diet

- Is necessary for insulin-dependent diabetics
- Involves calculation of calories, protein, carbohydrates, and fats, and the division of carbohydrates

  (NOTE: The physician may specify total calories, grams of carbohydrates, proteins, fats, and fractional division of carbohydrates among feedings, or the physician may order ADA distribution of nutrients.)

  EXAMPLE: 1,200 calorie ADA

Diet for women with gestational diabetes mellitus

- Increases calories by 300 and allows no weight reduction during pregnancy
- Emphasizes high-value sources of protein such as eggs, milk, and meat

QUICK CHECK

Check your knowledge of diabetic diets by completing one of the following exercises.

Exercise #1

Match the following types of diabetic diets to their correct descriptions. Write the correct numbers in the blanks. Answers may be used more than once.

_____a. Includes mild restrictions on amounts and types of foods

_____b. Number of calories allowed and type of hypoglycemic agent used should be specified by physician

_____c. Increases calories by 300 and allows for no weight reduction

_____d. Controls calories only, and varies with patient's weight, height, sex, age, and physical activity

_____e. Is suitable for diabetic patients (usually past middle age) who have been free from symptoms

_____f. Is necessary for insulin-dependent diabetics

_____g. Emphasizes high-value sources of protein such as eggs, milk, and meat

_____h. Involves calculation of calories, protein, carbohydrates, fats, and division of carbohydrates

_____i. May be suitable for noninsulin-dependent diabetics

_____j. Is particularly effective for the geriatric nursing home patient of normal weight

1. Liberal or free diabetic diet
2. Calorie-controlled diet
3. Calculated diet
4. Diet for women with gestational diabetes mellitus

Exercise #2

Name the diabetic diet most suitable for each of the following types of patients.

A. Insulin-dependent diabetic patient _____

B. Noninsulin-dependent diabetic patient _____

C. Fifty-year-old diabetic patient who has been free from symptoms _____

D. Woman whose pregnancy is complicated by diabetes mellitus _____

Exercise #1 — a. 1, b. 2, c. 4, d. 2, e. 1, f. 3, g. 4, h. 3, i. 2, j. 1
Exercise #2 — A. Calculated diet, B. Calorie-controlled diet, C. Liberal or free diabetic diet, D. Diet for women with gestational diabetes

GUIDELINES FOR EDUCATING INDIVIDUALS WITH DIABETES MELLITUS*

Interview patient

- Consider height and weight
- Obtain food preferences and habits
- Obtain diet history
- Determine individual's understanding of diabetes, including the importance of diet in controlling diabetes

Calculate diet

- Consider general dietary recommendations (See "General Dietary Recommendations for Diabetic Patients," page 45.)
- Select correct meal plan according to physician's order: consider caloric needs; division of protein, carbohydrate, and fat; and division into meals and snacks
- Individualize diet to patient, considering the need for insulin, family food budget, and other special medical conditions such as heart disease

Instruct for home care

- Provide verbal instruction, meal plan, and supplemental reference material such as the *Family Cookbook*, Volumes I and II from the American Dietetic Association

  (NOTE: Instruction for home care cannot be done effectively in one meeting.)
- Instruct patient on a meal plan
- Instruct on use of exchange lists
- Train patient to plan food for meals, using individualized pattern
- Discuss helpful hints
- Describe food preparation techniques
- Instruct insulin-dependent individual to carry a source of carbohydrate at all times in the event of a hypoglycemic episode

  (NOTE: In Oklahoma, a driver's license restriction states that if the driver is a known diabetic, food or candy must be within reach of the driver.)
- Instruct insulin-dependent individual on alterations in the diet to be made for illness, strenuous exercise, and unexpected timing of meals

Follow up

- Plan follow-up visit after dismissal
- Provide your phone number and name, and urge the patient to call you if additional questions arise

**The educational process also involves educating family members and significant others.*

QUICK CHECK

Determine how well you can apply the guidelines for educating individuals with diabetes mellitus. Interview and educate the workshop participant sitting to your right. Write pertinent information and instructions below.

GENERAL DIETARY RECOMMENDATIONS FOR DIABETIC PATIENTS

General Dietary Recommendations

Item	Recommendation
Protein	12 to 20 percent calories
Fat	30 to 38 percent modified fat Limit intake of cholesterol
Carbohydrate	50 to 60 percent calories Emphasize complex carbohydrate; restrict simple carbohydrate
Sodium	Moderation
Fiber	Encourage from food source
Alcohol	Limited use with approval of physician
Nutritive sweeteners	Advisibility of use varies with control and weight
Nonnutritive sweeteners	Presently considered acceptable in diabetic dietary patterns
Standard or preprinted diets	Discouraged Encourage individualization and flexibility

From "Examination of Current Dietary Recommendations for Individuals with Diabetes Mellitus" by R. Arky et. al., *Diabetes Care*, Vol. 5, No. 1, Jan./Feb., 1982. Used with permission.

CAUSES, SYMPTOMS, AND ACTIONS TO TAKE FOR DIABETIC COMA AND INSULIN REACTION

Causes, Symptoms, and Actions for Diabetic Coma and Insulin Reaction

	Diabetic Coma	**Insulin Reaction**
Causes	Deficiency of insulin	Too much insulin
	(NOTE: May occur in persons with undiagnosed diabetes or in a diabetic person who is not taking insulin.)	Low blood sugar
		Too little food
	High blood sugar	Increased exercise with no increase in food intake or decrease in insulin dosage
	Overeating	
	Physical stress (surgery, infection, illness)	
	Emotional stress	
Symptoms	**Gradual onset of—**	**Rapid onset of—**
	Fruity odor to breath (ketonic breath)	Shakiness
	Dry skin and mouth	Cold, clammy skin
	Very deep and rapid breathing	Sweating
	Excessive urination	Headache
	Weakness, fatigue	Hunger
	(NOTE: The patient will not have all of these symptoms, and the severity of the symptoms will vary.)	Staggering walk
		Slurred speech
		(NOTE: Individual may appear to be intoxicated.)
Action	Call physician immediately	Have patient eat or drink simple carbohydrate: Sweetened juice, regular carbonated beverage, sugar, skim milk
	Increase dosage of insulin	

QUICK CHECK

How well can you distinguish between causes, actions, and symptoms of diabetic coma and insulin reaction? Test yourself by writing "diabetic coma" or "insulin reaction" in the correct blanks below. Don't peek at the answers at the bottom of the page until you have completed the quick-check exercise.

1. _____

Causes

Deficiency of insulin
Overeating
Physical stress
Emotional stress
High blood sugar

2. _____

Causes

Too much insulin
Low blood sugar
Too little food intake
Increased exercise with no increase in food intake or decrease in insulin dosage

3. _____

Action

Have patient immediately eat or drink simple carbohydrate: Sweetened juice, regular carbonated beverage, sugar, skim milk

4. _____

Action

Call physician immediately
Increase dosage of insulin

5. _____

Symptoms

Shakiness
Cold, clammy skin
Sweating
Headache
Hunger
Staggering walk
Slurred speech

6. _____

Symptoms

Fruity odor to breath (ketonic breath)
Dry skin and mouth
Very deep, rapid breathing
Excessive urination
Weakness, fatigue

1. Diabetic coma, 2. Insulin reaction, 3. Insulin reaction, 4. Diabetic coma, 5. Insulin reaction, 6. Diabetic coma

CHARACTERISTICS OF INSULIN AND ORAL MEDICATIONS USED IN THE TREATMENT OF DIABETES MELLITUS

Insulin

- Has been available since 1921
- Major source is extraction from the pancreas of cattle and hogs
- Human form (*Humulin*) is produced in the laboratory
- Is a hormone that must be taken by injection
- Types differ in onset, peak, and duration of action
- Patient must usually be hospitalized to establish correct dosage

Oral medication

- Comes in tablet form and is used to reduce blood sugar levels
- Is recommended only for noninsulin-dependent (Type II) patients
- Enhances insulin secretion from the pancreas and increases cell utilization of glucose
- Is effective for obese patients

  (NOTE: The more obese the patient, the better the drug works.)
- Is best for short-duration disease

  (NOTE: The shorter the duration of the disease, the better the response.)
- Should not be used as replacement diet therapy
- May produce mild hypoglycemia

QUICK CHECK

Can you remember the distinctions between characteristics of insulin and those of oral medications used in the treatment of diabetes mellitus? Test yourself by completing the exercise below. Answers are at the bottom of the page, but don't peek until you have completed the exercise.

Distinguish between characteristics of insulin and characteristics of oral medications used in the treatment of diabetes mellitus. Write an "I" before characteristics of insulin and an "O" before characteristics of oral medications.

_____a. Should not be used as replacement for diet therapy

_____b. Has been available since 1921

_____c. Is best for short-duration disease

_____d. Is a hormone that must be taken by injection

_____e. Patient must usually be hospitalized to establish the correct dosage

_____f. Comes in tablet form and is used to reduce blood sugar levels

_____g. Human form (*Humulin*) is produced in the laboratory

_____h. Is effective for obese patients

_____i. May produce mild hypoglycemia

_____j. Is recommended only for noninsulin-dependent (Type II) patients

_____k. Major source is extraction from pancreas of cattle and hogs

_____l. Enhances insulin secretion from the pancreas and increases cell utilization

_____m. Types differ in onset, peak, and duration of action

a. O, b. I, c. O, d. I, e. I, f. O, g. I, h. O, i. O, j. O, k. I, l. I, m. O

TIME AND COURSE OF ACTION OF INSULIN FORMULATIONS

Time and Course of Action of Insulin Formulations

Type of Insulin	Onset	Peak	Duration
Short-acting			
Regular	15 to 30 minutes	2 to 4 hours	5 to 7 hours
Semilente	30 to 60 minutes	2 to 8 hours	12 to 16 hours
Intermediate-acting			
Lente	1 to 2 hours	6 to 12 hours	24 to 28 hours
NPH	1 to 2 hours	6 to 12 hours	24 to 28 hours
Long-acting			
Ultralente	4 to 6 hours	18 to 24 hours	32 to 36 hours
Protamine zinc	4 to 6 hours	13 to 24 hours	32 to 36 hours

Onset is affected by the site of injection. Peak action occurs earlier following exercise. Large doses extend duration over smaller theraputic doses (within the stated range).

From "Insulins 1983: Overview & Outlook" by J. Karen, *Clinical Diabetes*, Vol. 1 No. 4, July/Aug., 1983. Used with permission.

THE FOOD EXCHANGE SYSTEM

The food exchange system is useful in the treatment of diabetes mellitus, obesity, hypoglycemia, and Type IV hyperlipoproteinemia.

Foods are divided into the following six groups or exchange lists

Milk exchange

(NOTE: This exchange is based on skim milk. If whole milk is used, fat exchanges must be counted.)

Vegetable exchange

(NOTE: Some raw vegetables may be used as desired.)

Fruit exchange

(NOTE: This exchange is based on fresh fruit or on fruit that is processed without added sugar.)

Bread exchange

(NOTE: This exchange includes a variety of foods such as breads, starchy vegetables, cereal, flour, dried beans, prepared foods, and soup.)

Meat exchange

(NOTE: This exchange is divided into lean meat, medium-fat meat, and high-fat meat.)

Fat exchange

(NOTE: In addition to fats and oils, bacon, nuts, and salad dressings are on this exchange list.)

Exchange lists are based on the composition of foods. Each food within the same list contains approximately the same amount of calories, carbohydrates, proteins, fats, and fiber content as all other foods on the list. The description of each exchange list also indicates specific foods that are good sources of individual nutrients. Just remember that exchange lists contain foods that are —

Equal in calories

Equal in carbohydrates

Equal in proteins

Equal in fats

Comparable in fiber content

(NOTE: Foods with a high fiber content may improve glucose tolerance. See "Exchange List Guidelines for High-Fiber Choices" on page 55.)

QUICK CHECK

How well do you understand exchange lists? Test youself by completing the following exercise. Answers to this exercise are at the bottom of the page.

A. List the six food exchange lists.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

B. Discuss how the food exchange lists work.

_____

_____

_____

_____

_____

_____

A. 1. Milk exchange, 2. Vegetable exchange, 3. Fruit exchange, 4. Bread exchange, 5. Meat exchange, 6. Fat exchange

B. Foods within the same list contain approximately the same amounts of calories, carbohydrates, proteins, fats, and fiber content as all other foods on the list.

EXCHANGE LIST GUIDELINES FOR HIGH-FIBER CHOICES

Exchange List Guidelines for High-Fiber Choices

Exchange List	Average Dietary Fiber Content	Guidelines for High-Fiber Choices
Milk	0 grams	—
Vegetable	2 grams	Choose foods with edible skins and seeds (NOTE: Cooking reduces volume and destroys some nutrients but does not alter fiber content.)
Fruit	2 grams	Select fruits with edible skins and seeds Choose to eat more whole fruits instead of drinking fruit juice
Bread		
Legumes	8 grams	Choose fiberous legumes such as canned dried beans (lima, kidney, navy, pinto, etc.), dried peas, and lentils
Starchy vegetables	3 grams	—
Cereals	3 grams	Choose bran cereals for highest fiber content
Breads and grains	2 grams	Choose items made from grains that retain their natural fibrous coatings such as whole-grain breads or crackers (cracked-wheat, whole-meal, stone-ground, whole-wheat, or rye bread or crackers), and bran muffins (NOTE: "Wheat flour" on an ingredient list is usually white flour.)
Meat	0 grams	Choose crunchy peanut butter: 2 tablespoons contain about 3 grams of fiber
Fat	0 grams	Select any variety of nut or seed (NOTE: All varieties of nuts and seeds contain approximately 3 grams of fiber per 1/4 cup, or less than 1 gram of fiber per fat exchange.)

WORKSHOP ASSIGNMENT #1 — PLAN CALCULATED AND LIBERAL MENUS FOR A PERSON WITH DIABETES

NAME _____ DATE _____

Plan a day's menu for the diabetic diet from the following regular menu. Use the 1500-calorie meal pattern from the *Oklahoma Diet Manual*. Use the "Liberal Diabetic Diet Guidelines" to plan a second menu from the regular diet.

Regular Diet	1500-Calorie Diabetic Menu	Liberal Diabetic Menu
Breakfast		
Fresh grapefruit		
Choice of eggs		
Bacon		
Cornflakes		
Toast		
Margarine, jelly		
Milk		
Coffee, tea		
Lunch		
Fried chicken		
Mashed potatoes/gravy		
Seasoned green beans		
Sliced tomato		
Hot roll		
Margarine		
Apple crisp		
Milk		
Coffee, tea		
Supper		
Vegetable soup		
Grilled cheese sandwich		
Pear halves		
Whipped gelatin		
Milk		
Coffee, tea		
Bedtime		
Milk or juice		
Saltine crackers		

VARIOUS FORMS OF SUGAR FOUND IN FOOD PRODUCTS

Honey

Sucrose (table sugar)

Corn syrup

Glucose (also referred to a *dextrose*)

Fructose (also referred to as *levulose* or *fruit sugar*)

Invert sugar (a mixture of glucose and fructose found in fruits)

Lactose

Dextrin

Mannitol

Sorbitol

Xylitol

(NOTE: Mannitol, sorbitol, and xylitol are often referred to as *sugar sucrose substitutes* and are used in dietetic foods.)

Glycerin

Malt

NONCALORIC SUGAR SUBSTITUTES

Noncaloric Sugar Substitutes

Substitute	Brand Name	Comments
Saccharin	Sugar Twin Sweet and Low Sprinkle Sweet	There is unconfirmed research on saccharin as a cause of cancer
Aspartame	Equal Nutra Sweet (trade name)	Aspartame cannot be used as an ingredient in foods that must be cooked
Cyclamate	—	Cyclamate was banned from use in the United States in 1970; it is still allowed in more than forty countries

Used with permission of the Juvenile Diabetes Foundation International.

QUICK CHECK

Test yourself on noncaloric sugar substitutes and forms of sugar found in food products by completing the exercises below. Each correct answer counts 5 points. Perfect score is 80 points.

Exercise #1

Select from the following list various forms of sugar found in food products. Write an "X" in the blank before each correct answer.

_____a. Lactose
_____b. Saccharin
_____c. Sucrose
_____d. Corn syrup
_____e. Sorbitol
_____f. Cyclamate
_____g. Mannitol
_____h. Invert sugar
_____i. Gluten
_____j. Honey
_____k. Dextrin
_____l. Fructose
_____m. Glucose
_____n. Aspartame
_____o. Malt
_____p. Glycerin

Exercise #2

Match forms of noncaloric sugar substitutes to their correct descriptions and brand names. Write the correct numbers in the blanks. Numbers may be used more than once.

_____a. There is unconfirmed research on this substitute as a cause of cancer
_____b. This substitute was banned from use in the United States in 1970
_____c. This substitute cannot be used as an ingredient in foods that must be cooked
_____d. Equal
_____e. Sugar Twin
_____f. Nutra Sweet (trade name)
_____g. Sprinkle Sweet
_____h. Sweet and Low

1. Saccharin
2. Aspartame
3. Cyclamate

Exercise #1 — a, c, d, e, g, h, j, k, l, m, o, p

Exercise #2 — a. 1, b. 3, c. 2, d. 2, e. 1, f. 2, g. 1, h. 1

DIABETIC USES OF SUGAR SUBSTITUTES

Sugar Substitutes

Sweetener	Relative Sweetness (Comp. to Sugar)	Calories (for Sweetness of 1 TSP Sugar)	Use in Cooking	Disadvantages	Diabetic Use
Fructose	1½ times sweeter	12	Good	Must count calories into meal plan. Sweetness varies	Limited use for diabetics in good control
Sorbitol	½ as sweet	36	Good	High in calories — must count into diet. Large quantities may result in diarrhea.	Limited use for diabetics in good control
Xylitol	Same	18	Good	Laxative effect in large amounts. High in calories.	Limited use for those in good control
Cyclamate	Little sweeter	0	Good	Not available in U.S. Possibly carcinogenic.	Unlimited
Saccharin	300 times sweeter	0	Does not provide bulk or texture	Bitter aftertaste. Question of carcinogenicity.	Unlimited—will not affect blood sugar
Aspartame	200 times sweeter	0	Breaks down at high temps	Question of affect on behavior (unproven).	Unlimited—will not affect blood sugar

From "Sugar and Its Substitutes" by Peggy Grummon, M.S., R.D., *Diabetes Countdown*, Vol. 5, Issue 4, Winter 1984. Used with permission.

TECHNIQUES FOR BUILDING FLEXIBILITY INTO THE DIABETIC DIET

Inform patient how to eat away from home

- Avoid sauces on meats and vegetables
- Ask to put the dressing on the salad yourself; put other condiments on yourself
- Ask the waitress about serving sizes
- Use juice for your fruit choice if fresh fruit is not available
- Request meats baked or broiled
- Leave excess portions of food

Inform patient about use of alcoholic beverages

- Use patient handout section in the *Oklahoma Diet Manual* (1982) regarding alcoholic beverages
- Point out that alcohol can bring on hypoglycemia and that alcoholic beverages should not be used by some individuals on oral medications

Teach patient to convert recipes to exchanges

- List all ingredients in the recipe and their amounts
- Identify the exchange group of each ingredient and identify the number of exchanges in each ingredient
- Total each exchange group
- Divide the total number of exchanges for each exchange group by the number of servings in the recipe
- Round answer to nearest one-half exchange

  (NOTE: Anything less than one-half exchange need not be counted.)

Teach patient to convert nutrition information on packaged goods to exchanges

- Read the label to determine the carbohydrate, protein, and fat per serving
- Compare this information with the carbohydrate, protein, and fat information in the exchange tables in the *Oklahoma Diet Manual*
- Determine which exchanges are closest to the food item in terms of food composition to equal one serving of this packaged food

QUICK CHECK

Check your basic knowledge of building flexibility into the diabetic diet by completing the exercise below.

A. List the four basic techniques for building flexibility into the diabetic diet.

1. _____

2. _____

3. _____

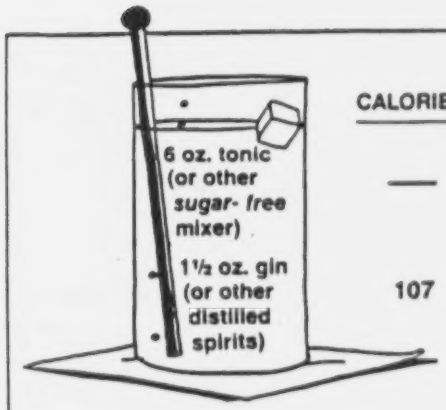
4. _____

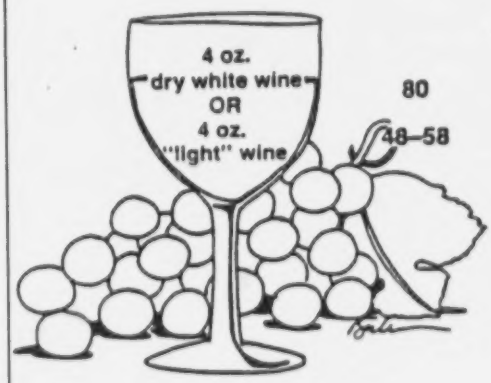
B. Pretend that the workshop participant to your right has Type I, insulin-dependent diabetes mellitus. Educate this person as to techniques for building flexibility into his or her diabetic diet.

A. 1. Inform patient how to eat away from home, 2. Inform patient about use of alcoholic beverages, 3. Teach patient to convert recipes to exchanges, 4. Teach patient to convert nutrition information on packaged goods to exchanges

B. Self-evaluated

Alcohol Arithmetic





	CALORIES	CARB.	EXCHANGES
6 oz. tonic (or other *sugar- free* mixer)	—	—	—
1½ oz. gin (or other distilled spirits)	107	0	2 fat
4 oz. dry white wine	80	0.4 grams	2 fat
OR			
4 oz. "light" wine	48–58	1.3 grams	1 fat
12 oz. "light" beer	90	6 grams	2 fat
OR			
12 oz. regular beer	151	13.7 grams	2 fat, 1 bread

ILLUSTRATION BY RICHARD BACKER

Used with permission of the American Diabetes Association.

TM #7

NUTRITION LABEL

CHICKEN POT PIE, FROZEN

NUTRITION INFORMATION	(PER SERVING)
SERVING SIZE	1 pie
SERVINGS PER CONTAINER	1
CALORIES	362
PROTEIN	13.6
FAT	20.3
CARBOHYDRATE	31.6

NUTRITION LABEL EXCHANGES

	CHO	PRO	FAT
Chicken pot pie	31.6	13.6	20.3
Step 1: Subtract two bread exchanges	− 30.0	− 4.0	
	1.6	9.6	
Step 2: Subtract one meat exchange		− 7.0	− 5.0
		2.6	15.0
Step 3: Subtract three fat exchanges			− 15.0
			0
Step 4: Determine whether or not nutrients equal any other exchange group	1.6	2.6	0

Chicken pot pie = 2 bread, 1 meat, and 3 fat

WORKSHOP ASSIGNMENT #2 — PLAN A DINNER AT A FAST-FOOD RESTAURANT

NAME _____ DATE _____

Using the 1500-calorie meal pattern from the *Oklahoma Diet Manual* and pamphlet information on fast food restaurants, plan an appropriate fast-food dinner for a patient.

WORKSHOP ASSIGNMENT #3 — CONVERT TO EXCHANGES NUTRITION INFORMATION ON PACKAGED GOODS

NAME _____ DATE _____

CHEESE CANNELLONI WITH TOMATO SAUCE

NUTRITION INFORMATION	(PER SERVING)		
SERVING SIZE	9⅛ oz.		
SERVINGS PER CONTAINER	1		
CALORIES	270	**CHOLESTEROL	45mg
PROTEIN	22g	SODIUM	900mg
CARBOHYDRATE	24g	POTASSIUM	270mg
FAT	10g		

PERCENTAGE OF U.S. RECOMMENDED DAILY ALLOWANCE (U.S. RDA)

PROTEIN	35	RIBOFLAVIN	15
VITAMIN A	25	NIACIN	6
VITAMIN C	10	CALCIUM	30
THAMINE	6	IRON	4

Using the exchanges, how could you figure this item into a 1500-calorie diabetic diet?

WHOLE-WHEAT PIZZA RECIPE*

1 Tbsp. vegetable oil

1 tsp. sugar

1/2 tsp. salt

1/2 pkg. yeast

3/4 c. all-purpose flour

3/4 c. whole-wheat flour

1/2 lb. raw ground beef

1/2 tsp. salt

1 c. pizza sauce

1 c. shredded mozzarella cheese (4 oz.)

3/4 c. sliced mushrooms

1/4 c. sliced green onions

1 green pepper sliced

2 Tbsp. Parmesan cheese

*Makes 10 slices

WHOLE-WHEAT PIZZA RECIPE EXCHANGES

Your Recipe: Whole Wheat Pizza

Ingredients	Exchanges						
	Meat	Fruit	Bread	Milk	Fat	Veg.	Free
1 Tbsp. vegetable oil					3		
1 tsp. sugar		1/2					
1/2 tsp. salt							
1/2 pkg. yeast							
3/4 c. all-purpose flour			5				
3/4 c. whole-wheat flour			5				
1/2 lb. raw ground beef	6						
1 c. pizza sauce						4	
1 c. shredded mozzarella cheese (4 oz.)	4						
3/4 c. sliced mushrooms						2	
1/4 c. sliced green onions						1	
1 green pepper sliced						1	
2 Tbsp. Parmesan cheese	1						
Total Exchanges	11	1/2	10		3	8	
Total Exchanges / Total Servings = Exchanges per serving	1	-	1			1	

WORKSHOP ASSIGNMENT #4 — CONVERT A RECIPE TO EXCHANGES

NAME _____ DATE _____

Convert the recipe below to exchanges. Use the form on the following page.

Chop Suey*

2 c. rice (uncooked)

2 Tbsp. margarine

1 lb. pork (uncooked)

1 bunch scallions

1 c. chopped celery

1 can water chestnuts (8 oz.)

1 can sliced mushrooms (4 oz.)

1 Tbsp. soy sauce

2 Tbsp. water

2 Tbsp. cornstarch

*Makes 6 servings.

POSSIBLE ALTERATIONS IN THE DIABETIC DIET

Consistency modification — May be required for the ill or endentulous patient or as a preparation of the patient for laboratory tests or x rays

(NOTE: Refer to the *Oklahoma Diet Manual*.)

- General Rule of Thumb: The ill, insulin-dependent diabetic patient should receive 50 grams of carbohydrate to be eaten every 3 to 4 hours.

Replacement feedings — Are given to account for available glucose in foods not consumed at a meal by patients who receive insulin

- Calculate available glucose as follows: Multiply grams of carbohydrate by 1.0
  Multiply grams of protein by .58
  Multiply grams of fat by .10

Unexpected timing of meals (delayed meals) — Alterations are required for insulin-dependent patients because they require as much consistency in the daily routine as possible

- Carbohydrate should be eaten to replace part of meal delayed

- Snacks and meals may, on occasion, be reversed

  EXAMPLE: Normal schedule — Dinner 6 P.M.; snack 8:30 P.M.
  Reverse schedule — Snack 6 P.M.; dinner 7:30 P.M.

Increased food needs due to exercise — Alterations are required for insulin-dependent patients who are going to participate in strenuous activity

(NOTE: Exercise makes tissues more sensitive to glucose and results in decreased insulin need and increased need for food. Exercise without food should not be done at times when insulin action is peaking. If insulin dosage is not reduced, or if carbohydrate intake is not increased sufficiently, exercise can result in a hypoglycemic reaction.)

- General Rule of Thumb: Insulin-dependent individuals should add 10 to 15 grams of carbohydrate per each 30 minutes of moderate to strenuous activity about 30 minutes prior to the activity

Individualization — Alterations are required to accommodate patient's food tolerances, preferences, and financial situation

(NOTE: Meal plans may need to be changed by excluding certain food groups. Refer to the *Oklahoma Diet Manual* for "Guidelines for Individualizing the Diabetic Diet.")

- Patient generally on diabetic diet combined with other dietary restrictions

- Diet combinations are common

QUICK CHECK

Complete the exercises below to check your knowledge of instances that may require alterations in the diabetic diet.

Exercise #1

List the five instances in which alterations to the diabetic diet may be required.

1. _____
2. _____
3. _____
4. _____
5. _____

Exercise #2

Answer the following questions.

1. How do you calculate available glucose for replacement feedings?

   _____

   _____

   _____

2. Why do insulin-dependent patients who are going to participate in strenuous activity need increased food intake?

   _____

   _____

   _____

3. What is the General Rule of Thumb for increased food needs due to exercise?

   _____

   _____

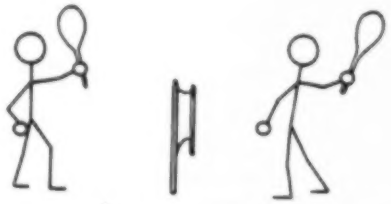
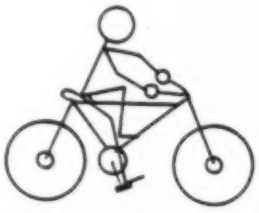
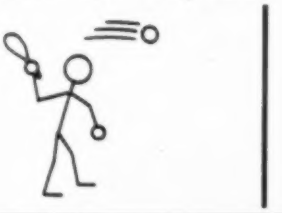
4. What is the General Rule of Thumb for the ill, insulin-dependent patient?

   _____

Exercise #1 — 1. Consistency modification, 2. Replacement feedings, 3. Unexpected timing of meals, 4. Increased food needs due to exercise, 5. Individualizing the diet

Exercise #2 — See "Possible Alterations in the Diabetic Diet" on reverse side of page.

Examples of Moderate and Strenuous Activity

Jogging	Tennis 
Swimming	Biking 
Gardening	Raquetball and Squash 
Football	Basketball
Dancing (Square or Fast Step)	Wood Sawing or Chopping

TM #8

WORKSHOP ASSIGNMENT #5 — ADJUST DIABETIC MENUS FOR CHANGES IN CONSISTENCY

NAME _____ DATE _____

PART I

Plan a day's menu for the patient who requires clear liquids because of illness. Follow the 2000-calorie diabetic diet meal pattern in the *Oklahoma Diet Manual*.

Breakfast	Lunch	Dinner	Snack(s)

PART II

Plan a day's menu for the patient who requires a full-liquid diet because of temporary dental problems. Follow the 1800-calorie diabetic diet meal pattern in the *Oklahoma Diet Manual*.

Breakfast	Lunch	Dinner	Snack(s)

REPLACING FOOD NOT EATEN

Step 1: Calculate available glucose.

EXAMPLE:	CHO	PRO	FAT
½ cup cereal	15	2	
½ egg		3	2
1 slice bacon			5
	15	5	7
	× 1	× .58	× .10
	15	2.90	.70

Total = 18.60 grams carbohydrate

Step 2: Choose food replacement.

EXAMPLE: Two fruit exchanges equal 20 grams carbohydrate

Choice: 1 cup orange juice

WORKSHOP ASSIGNMENT #6 — MAKE CARBOHYDRATE REPLACEMENT FOR FOOD NOT CONSUMED

NAME _____ DATE _____

Calculate the available glucose in foods for the following cases, and determine the appropriate carbohydrate replacement.

CASE 1

Mr. Evans, an insulin-dependent diabetic, leaves the following food on his tray:

1 slice bread
1 ounce meat
1/4 cup applesauce
1/3 cup milk

Mr. Evans requested apple juice as his carbohydrate replacement. How much would he need?

_____

_____

_____

CASE 2

Mrs. Wilson, an insulin-dependent diabetic, leaves the following food on her tray:

1/2 slice bread
1 tsp. butter
1 small apple

How much orange juice will she need to replace the carbohydrates in these foods?

_____

_____

_____

Your Recipe: _____

Ingredients	Exchanges						
	Meat	Fruit	Bread	Milk	Fat	Veg.	Free
Total Exchanges							
Total Exchanges / Total Servings = Exchanges per serving							

GLYCEMIC INDEX

Glycemic index: the area under the blood-glucose response curve for each food expressed as a percentage of the area after taking the same amount of carbohydrate as glucose*

Glycemic Index

100 percent	70 to 79 percent	60 to 69 percent
Glucose	Bread (wholemeal)	Bread (white)
	Millet	Rice (brown)
80 to 90 percent	Rice (white)	Muesli (a cereal)
Cornflakes	Weetabix (a cereal)	Shredded Wheat
Carrots†	Broad beans (fresh)†	"Ryvita" (a cereal)
Parsnips†	Potato (new)	Water biscuits
Potatoes (instant mashed)		Beetroot†
Maltose		Bananas
Honey		Raisins
		Mars bar

50 to 59 percent	40 to 49 percent	30 to 39 percent
Buckwheat	Spaghetti (wholemeal)	Butter beans
Spaghetti (white)	Porridge oats	Haricot beans
Sweet corn	Potato (sweet)	Blackeye peas
All-bran	Beans (canned navy)	Chick peas
Digestive biscuits	Peas (dried)	Apples (Golden Delicious)
Oatmeal biscuits	Oranges	Ice cream
"Rich Tea" biscuits	Orange juice	Milk (skim)
Peas (frozen)		Milk (whole)
Yam		Yogurt
Sucrose		Tomato soup
Potato chips		

20 to 29 percent	10 to 19 percent
Kidney beans	Soya beans
Lentils	Soya beans (canned)
Fructose	Peanuts

*Data from normal individuals (after Jenkins et al., Am. J. Clin. Nutr. 1981.)
†24-g carbohydrate portions tested.

From "Lente Carbohydrate: A Newer Approach to the Dietary Management of Diabetes" by D. Jenkins, *Diabetes Care*, Vol. 5, No. 6, Nov./Dec., 1982. Used with permission.

WORKSHOP ASSIGNMENT #7 — ADJUST A MEAL PATTERN FOR OCCASIONS THAT REQUIRE ALTERATIONS IN MEAL PLANS

NAME _____ DATE _____

Adjust the meal patterns for the following cases that require alterations in meal plans.

CASE 1

Mr. Anderson, an insulin-dependent diabetic, is attending a reception and dinner as part of his job obligations. Mr. Anderson usually has his evening meal at 6:00 P.M. He knows the dinner will be at 7:30 P.M. The reception is a wine and cheese tasting affair. What kind of diet changes does Mr. Anderson need to make to avoid insulin reaction? How much wine is appropriate for Mr. Anderson? What should be excluded from his meal if he drinks the wine? He normally follows a 2000-calorie meal plan.

_____

_____

_____

CASE 2

Miss Roberts, an insulin-dependent diabetic, has been invited to play tennis for one hour on Saturday morning at 11:00 A.M. What changes are required in her diet to accommodate the exercise and decrease her chances of having an insulin reaction? She normally follows an 1800-calorie meal plan.

_____

_____

_____

CASE 3

Mrs. Davis, a noninsulin-dependent diabetic, is planning on playing tennis for one hour with Miss Roberts. What changes are required in her diet? She normally follows a 1200-calorie meal plan.

_____

_____

_____

WORKSHOP ASSIGNMENT #8 — ADJUST A MEAL PATTERN FOR INDIVIDUALIZATION

NAME _____ DATE _____

Adjust the meal patterns for the following cases illustrating food preferences, food intolerances, and limited economic resources.

CASE 1

Mr. Anderson does not eat vegetables except potatoes, corn, and peas. What changes should be made for Mr. Anderson in the 2000-calorie menu plan as written in the *Oklahoma Diet Manual*?

_____

_____

_____

CASE 2

Miss Roberts is lactose intolerant. What changes should be made for Miss Roberts in the 1800-calorie meal plan as written in the *Oklahoma Diet Manual*?

_____

_____

_____

CASE 3

Mrs. Davis has a very limited income. She does not buy fruit or much meat for protein. What changes could be made for Mrs. Davis in the 1200-calorie meal plan as written in the *Oklahoma Diet Manual*? What other recommendations could you give her for staying on the diet restriction on a limited budget? If time permits, plan one low cost-menu for Mrs. Davis.

_____

_____

_____

_____

ANSWERS TO WORKSHOP ASSIGNMENTS

Assignment #1

	1500-Calorie Diabetic Menu	Liberal Diabetic Menu
Breakfast	1/2 grapefruit	Fresh grapefruit
	1 egg, boiled or poached	Eggs, boiled or poached
	.1 slice toast	Bacon
	3/4 c. cornflakes	Cornflakes
	2 bacon	1 toast
	1 tsp. margarine	Margarine
	1/2 c. skim milk	Milk
	Coffee/tea	Coffee/tea
Lunch	2 oz. baked chicken	Baked chicken
	1/2 c. mashed potatoes	Mashed potatoes/gravy
	1 small hot roll	Seasoned green beans
	1/2 c. plain green beans	Sliced tomato
	2 tsp. margarine	Hot roll
	1 small apple	Fresh apple or unsweetened applesauce
	1/2 c. skim milk	
	Coffee/tea	Coffee/tea
Dinner	2 c. vegetable soup	Vegetable soup
	2 oz. cheese or low-fat meat	Grilled cheese sandwich
	1 small pear	Pear, unsweetened
	1/2 c. skim milk	Dietetic gelatin
	Vegetable	Coffee/tea
Snack	1/2 c. skim milk	Milk
	4 crackers	Crackers

Assignment #2

Answers will depend on information distributed to participants

Assignment #3

2 1/2 lean meat
1 1/2 bread
1/2 vegetable
1/2 fat

Assignment #4

1 serving = 1 bread + 2 meat + 1 fat + 1 vegetable OR 1 bread + 2 vegetable + 2 medium-fat meat

Assignment #5

Part I

The carbohydrate content (240 grams) of the 2000-calorie diabetic diet should be replaced

Part II

	2000-Calorie Clear Liquid	1800-Calorie Full-Liquid
Breakfast	(60 grams CHO) 1 1/3 c. apple juice 1/2 c. gelatin, regular Broth Coffee/tea	1/2 c. orange juice 1 c. cooked cereal 4 tsp. margarine 1 1/2 c. skim milk* (*1 bread + 2 egg = 1 skim milk + 1 fat)
Lunch	(80 grams CHO) 1 c. grape juice 1 twin popsicle 1/2 c. gelatin Broth Coffee/tea	1 c. egg custard 1 1/2 c. creamed soup 1/3 c. apple juice 4 tsp. margarine 1 c. skim milk* (1 fruit + 1 egg = 1 skim milk + 1 fat)
Dinner	(70 grams CHO) 1 c. cranberry juice 1/2 twin popsicle Broth Coffee/tea	1 c. creamed soup 1/2 c. grapefruit juice 2 tsp. margarine 1 c. skim milk (1 bread + 1 meat = 1 skim milk + 1 fat)
Snack(s)	(30 grams CHO) 1 c. apple juice Broth Coffee/tea	1/2 c. regular pudding 1 c. skim milk (NOTE: Perhaps during illness 2-percent or whole milk could be substituted to reduce the number of fat exchanges to be used as fat in the meal plan.)

Assignment #6

Case 1 — 31.2 grams available glucose
1 cup apple juice

Case 2 — 18.33 grams available glucose
1 cup orange juice

Assignment #7

Case 1 — Mr. Anderson could have more fruit or bread exchanges.

Case 2 — Determine if Miss Roberts tolerates Sweet Acidophilus milk or milk treated with products such as Lact-Aid, or Lactozyme. If so, no meal plan change is needed. Otherwise, the milk should be omitted. Bread, fruit, and meat need to be substituted for it.

Case 3 — Fruit could be eliminated. Additional bread could be planned into the menus.

Assignment #8

Case 1 — Mr. Anderson could eat some carbohydrate food at his normal dinner time, or he could move his snack (or part of it) to the normal dinner hour. The maximum he should drink is 1 to 2 glasses of wine. (1 glass of wine = 2 fat.)

Case 2 — Miss Roberts should eat 20 to 30 grams of carbohydrate 30 minutes prior to playing tennis. This food should be in addition to her 1800-calorie meal plan. Her meal plan should not be changed.

Case 3 — Mrs. Davis should make no changes in her meal plan. Because she is on oral medications, she probably will not experience an insulin reaction.

WORKSHOP REFERENCES

A. Arky, R., et. al. "Examination of Current Dietary Recommendations for Individuals with Diabetes Mellitus," *Diabetes Care*, Vol. 5, No. 1, January/February, 1982.

B. "Classification and Diagnosis of Diabetes Mellitus and Other Categories of Glucose Intolerance," *Journal of Diabetes*, Vol. 28, No. 12, National Diabetes Data Group, December 1979.

C. Crapo, P. *Diet and Nutrition in Diabetes: A State-of-the-Art Review*. Washington, D.C.: National Diabetes Information Clearinghouse, N.I.H. Public Health Service, U.S. Department of Health, July 1983.

D. Franz, M. *Exchanges for All Occasions.* Minneapolis, Minnesota: International Diabetes Center, 1983.

E. Gaudiani, L., and K. Feinegold. "Alcohol and Diabetes: Mix with Caution," Patient Handout, *Clinical Diabetes*, November/December, 1984.

F. "Glycemic Effects of Carbohydrates," *Diabetes Care*, Vol. 7, American Diabetes Association, November/December, 1984.

G. Grummon, P. "Sugar and Its Substitutes," *Diabetes Countdown*, Vol. 5, Issue 4, Winter, 1984.

H. Jenkins, D. "Lente Carbohydrate: A Newer Approach to Dietary Management of Diabetes," *Diabetes Care*, Vol. 5, No. 6, November/December, 1982.

I. Karen, J. "Insulins 1983: Overview and Outlook," *Clinical Diabetes*, Vol. I, No. 4, July/August, 1983.

J. *Keeping Well with Diabetes.* Princeton, New Jersey: Squibb-Novo, Inc., n.d.

K. *What Is Diabetes?* Indianapolis, Indiana: Eli Lilly and Company, 1980.